

**Organic carbon cycling in the Atlantic Ocean off Cape Hatteras**

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The cycling of dissolved organic matter (DOM) in the Ocean continues to be an enigma. One of the most vexing aspects of DOM concerns its old apparent age and fast turnover times within some of its fractions. We report here concentrations of dissolved organic carbon (DOC) and colloidal organic carbon (COC) in size or molecular weight classes  $\geq 1\text{kDalton}$  to  $0.4\mu\text{m}$  (COC1) and  $\geq 10\text{kDalton}$  -  $0.2\mu\text{m}$  (COC10), isolated using large-volume cross-flow ultrafiltration techniques (Guo et al., 1994, Mar. Chem. 45, 105), as well as radiocarbon ages of fractions of colloidal organic matter (COM). DOC concentrations of surface waters off Cape Hatteras sampled in May 1993 were  $80\text{--}100\mu\text{M}$ , decreasing to about  $45\mu\text{M}$  below a depth of about  $400\text{m}$ . COM10 from bottom waters of shelf and slope regions contained very old carbon (ie, about  $1.2\text{--}1.35 \times 10^4$  years), while surface water COM10 was much younger (ie,  $0.5\text{--}2 \times 10^3$  years). These results will be compared to new data from our June/July 1994 cruise to this region. It appears that transport of resuspended sediments throughout the water column dilutes freshly produced colloidal organic carbon with old detrital carbon from sediments. These observations from the Cape Hatteras region are in contrast to those from the Gulf of Mexico, where we observe a modern radiocarbon age (ie, younger than 40 years) for high-molecular weight COM10 and radiocarbon ages of COM1 which increase from near-shore to off-shore, and from the surface to the bottom, ranging from a few hundred to 1500 years in surface waters and to 4500 years at 1500 m water depth.

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